[Drawings]

Fig. 1 -- HEAT PRODUCTION Q [kJ]

CRANK ANGLE (deg)

Fig. 3 --

S10: SETTING INTAKE AIR QUANTITY AND FUEL INJECTION QUANTITY

S12: THROTTLE CONTROL, FUEL INJECTION

S14: OBTAINING $P(\theta_1)$

S16: CALCULATING $P(\theta_1) V^{\kappa}(\theta_1)$

S18: OBTAINING $P(\theta_2)$

S20: CALCULATING $P(\theta_2) V^{\kappa}(\theta_2)$

S26: COUNTER INCREMENT

S28: COUNT NUMBER > THRESHOLD VALUE ?

S30: CORRECTING AT LEAST ANY OF OPENING OF THROTTLE, FUEL INJECTION QUANTITY, VALVE TIMING, and EGR RATE

S32: COUNTER RESET

S36: COMPLETE MISFIRE ASSUMPTION, WARNING DISPLAY

FIG.1
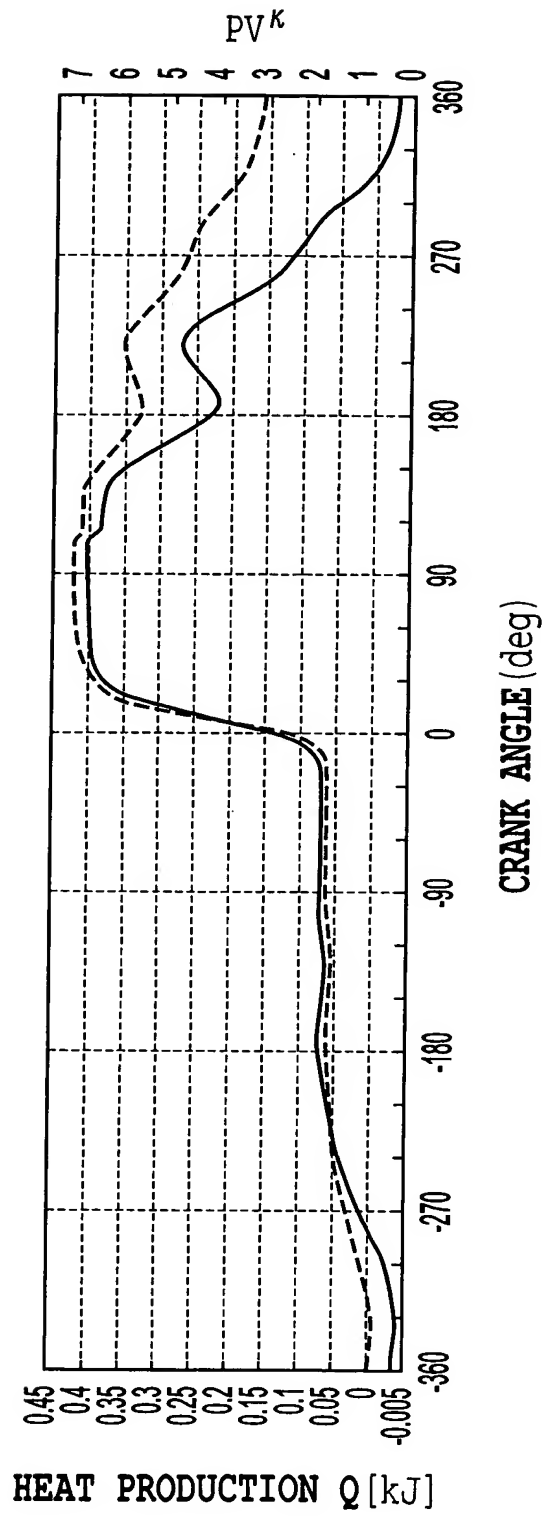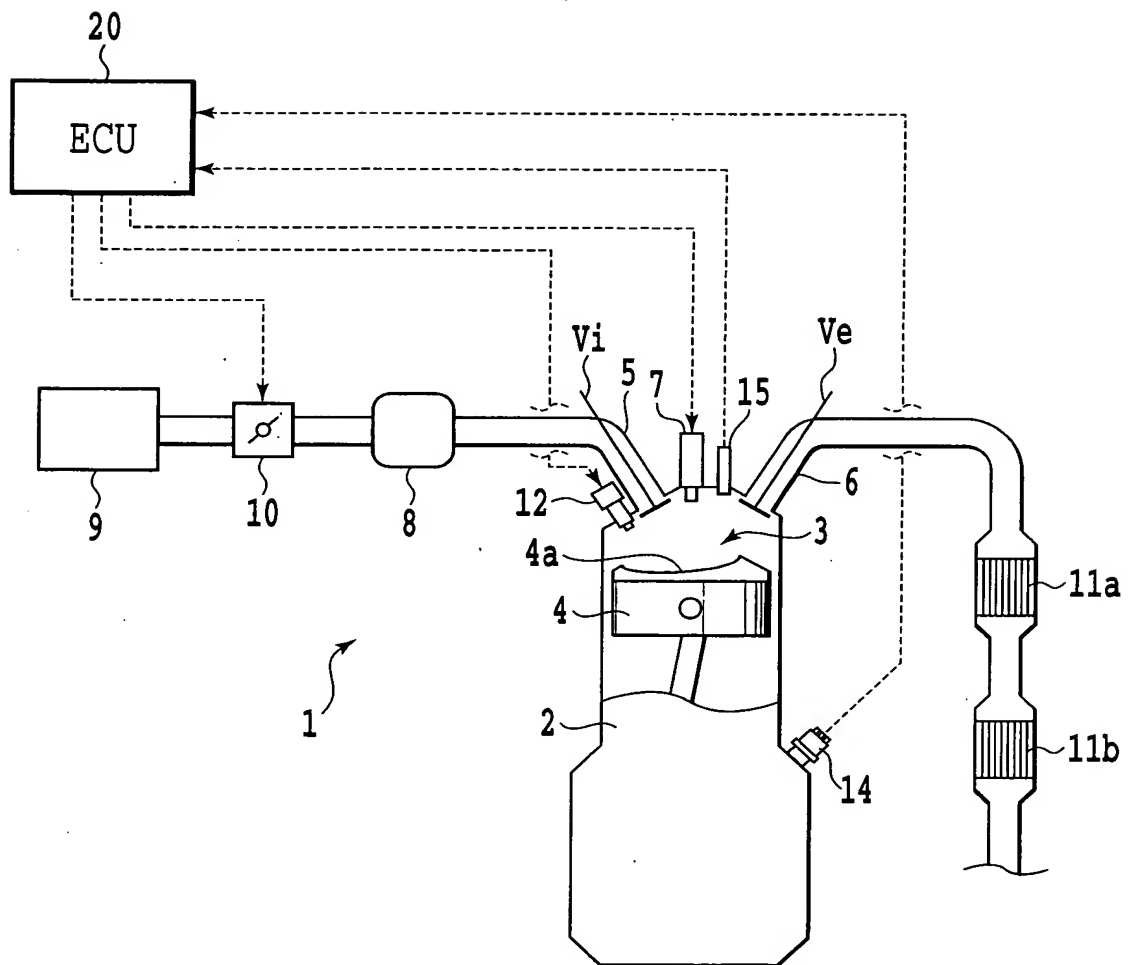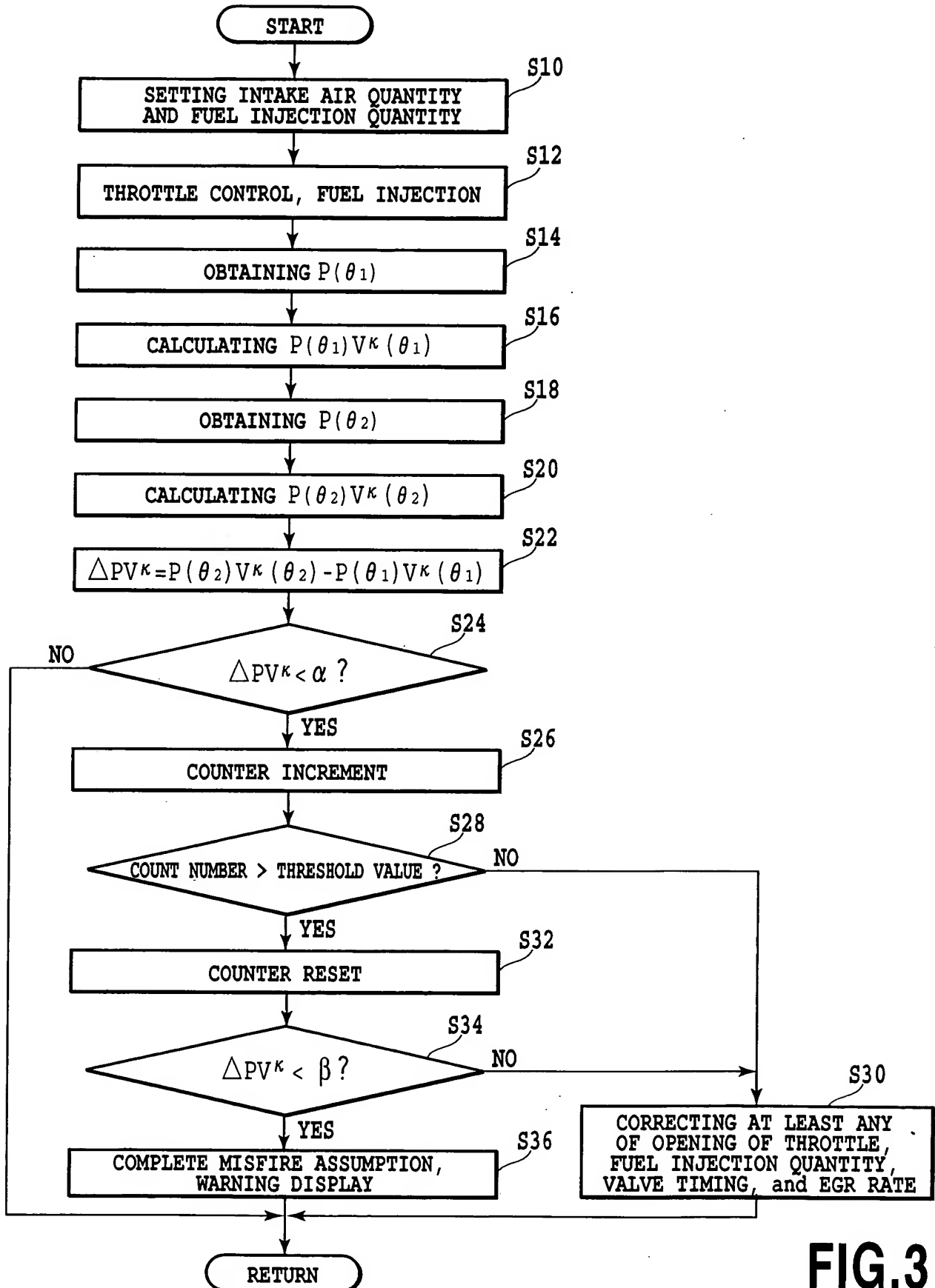
FIG.2

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                    ┌─────────────┐
                    │    START    │
                    └──────┬──────┘
                           │
         ┌─────────────────▼─────────────────┐  S10
         │   SETTING INTAKE AIR QUANTITY     │
         │   AND FUEL INJECTION QUANTITY     │
         └─────────────────┬─────────────────┘
                           │                    S12
         ┌─────────────────▼─────────────────┐
         │   THROTTLE CONTROL, FUEL INJECTION │
         └─────────────────┬─────────────────┘
                           │                    S14
         ┌─────────────────▼─────────────────┐
         │         OBTAINING P(θ₁)            │
         └─────────────────┬─────────────────┘
                           │                    S16
         ┌─────────────────▼─────────────────┐
         │      CALCULATING P(θ₁)Vᴷ(θ₁)      │
         └─────────────────┬─────────────────┘
                           │                    S18
         ┌─────────────────▼─────────────────┐
         │         OBTAINING P(θ₂)            │
         └─────────────────┬─────────────────┘
                           │                    S20
         ┌─────────────────▼─────────────────┐
         │      CALCULATING P(θ₂)Vᴷ(θ₂)      │
         └─────────────────┬─────────────────┘
                           │                    S22
         ┌─────────────────▼─────────────────┐
         │  △PVᴷ=P(θ₂)Vᴷ(θ₂)-P(θ₁)Vᴷ(θ₁)    │
         └─────────────────┬─────────────────┘
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S10 SETTING INTAKE AIR QUANTITY AND FUEL INJECTION QUANTITY

S12 THROTTLE CONTROL, FUEL INJECTION

S14 OBTAINING $P(\theta_1)$

S16 CALCULATING $P(\theta_1)V^{\kappa}(\theta_1)$

S18 OBTAINING $P(\theta_2)$

S20 CALCULATING $P(\theta_2)V^{\kappa}(\theta_2)$

S22 $\triangle PV^{\kappa} = P(\theta_2)V^{\kappa}(\theta_2) - P(\theta_1)V^{\kappa}(\theta_1)$

S24 $\triangle PV^{\kappa} < \alpha$? — NO / YES

S26 COUNTER INCREMENT

S28 COUNT NUMBER > THRESHOLD VALUE ? — NO / YES

S32 COUNTER RESET

S34 $\triangle PV^{\kappa} < \beta$? — NO / YES

S36 COMPLETE MISFIRE ASSUMPTION, WARNING DISPLAY

S30 CORRECTING AT LEAST ANY OF OPENING OF THROTTLE, FUEL INJECTION QUANTITY, VALVE TIMING, and EGR RATE

RETURN

FIG.3